

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 07514

CSAH NO. 34

OVER THE

BLUE EARTH RIVER

DISTRICT 7 - BLUE EARTH COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 136)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 07514, Piers 1 and 2, were found to be in good condition with no structurally significant defects observed. Minor scour depressions were observed at the upstream nose of both piers, as well as minor accumulations of timber debris. The channel bottom around the substructure units appeared stable with no evidence of significant scour and no appreciable changes since the previous inspection.

INSPECTION FINDINGS:

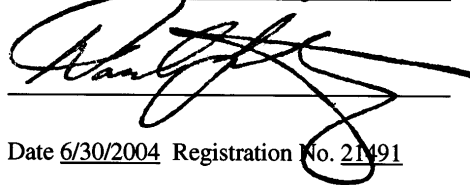
- (A) Minor areas of poor consolidation were observed in the concrete of Pier 1 at the upstream nose.
- (B) A 1/16-inch-wide vertical crack was observed on the upstream nose of Pier 1 and extended from the waterline to 3 feet above the waterline.
- (C) A scour depression, 2 foot in radius and 1.5 foot deep, was observed at the upstream nose of Pier 1, and a scour depression, 2.5 foot in radius and 1 foot deep, was observed at the upstream nose of Pier 2.
- (D) Light to moderate accumulations of timber debris, with pieces up to 1 foot in diameter, were observed at the upstream nose of both piers.
- (E) Steep vertical banks due to erosion were observed under the bridge on the east side and upstream and downstream of the structure on both sides of the river.

RECOMMENDATIONS:

- (A) Monitor the timber debris at the piers, and if found to be increasing in the future, removal operations may become warranted.
- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

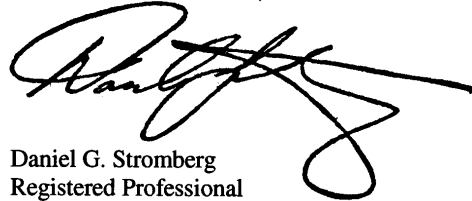
Daniel G. Stromberg

A large, stylized handwritten signature of Daniel G. Stromberg in black ink, written over a horizontal line.

Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

A large, stylized handwritten signature of Daniel G. Stromberg in black ink, written over a horizontal line.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 07514

Feature Crossed: The Blue Earth River

Feature Carried: CSAH No. 34

Location: District 7 - Blue Earth County

Bridge Description: The bridge superstructure consists of three spans of multiple steel girders supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and two reinforced concrete piers. The abutments are founded on steel piles, while the piers are supported by concrete spread footings. The piers are numbered 1 and 2 starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker, P.E.

Dive Team: Michelle D. Koerbel, Clayton G. Brookins

Date: November 2, 2002

Weather Conditions: Sunny, " 35EF

Underwater Visibility: " 3 feet

Waterway Velocity: " 1.0 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The piers each consist of a reinforced concrete rectangular shaft with hammerhead cap and rounded ends. The piers are founded on rectangular spread footings.

Maximum Water Depth at Substructure Inspected: Approximately 4.3 feet.

4. WATERLINE DATUM

Water Level Reference: The top of Pier 2 on the south end.

Water Surface: The waterline was approximately 19.0 feet below reference.
Waterline Elevation = 1016.4

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

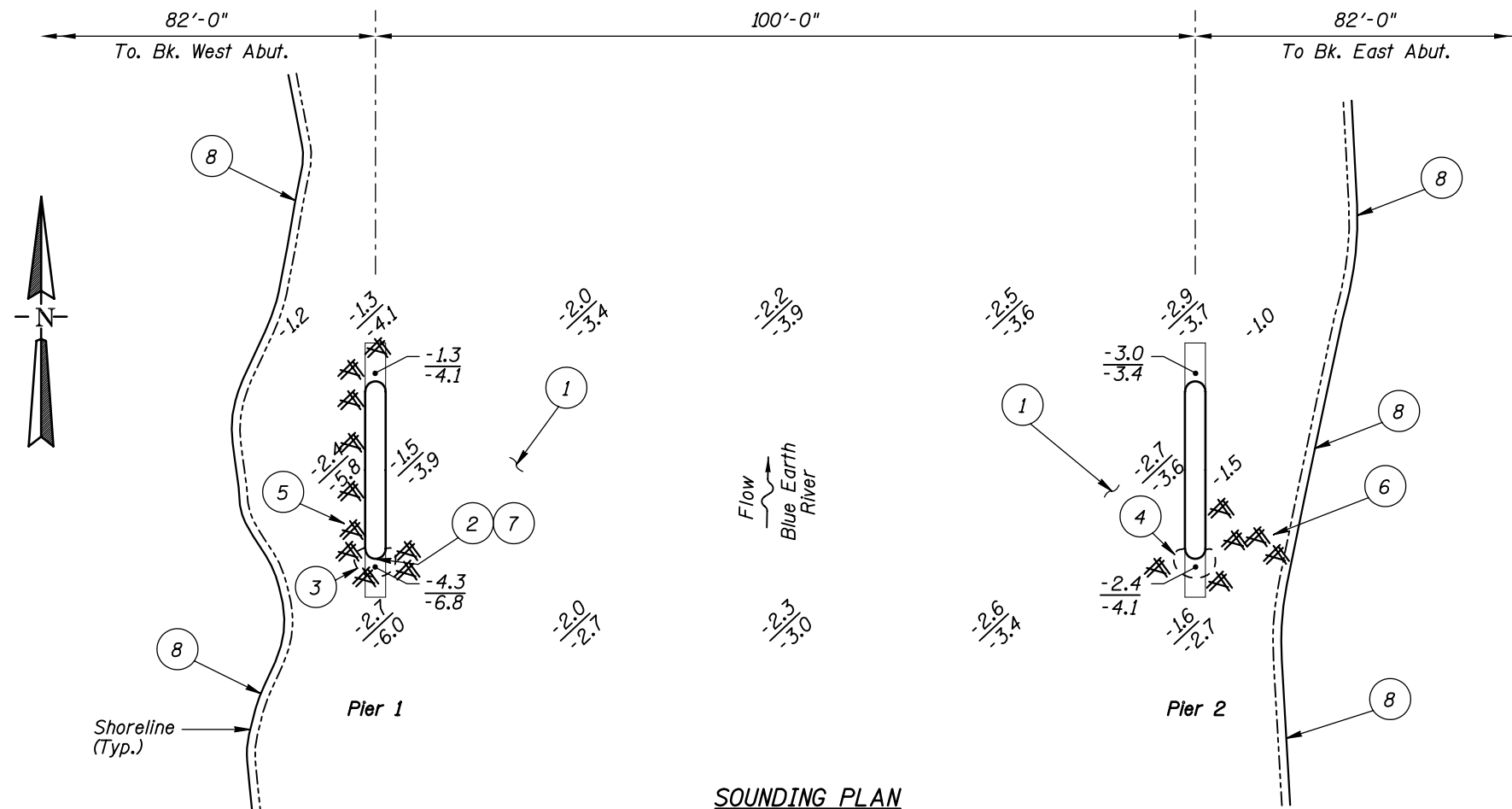
Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code B/11/02

Item 113: Scour Critical Bridges: Code J/91

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes X No



SOUNDING PLAN

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on November 2, 2002, the waterline was located approximately 19.0 feet below the top of the pier cap at the upstream end of Pier 2. This corresponds to a waterline elevation of 1016.4 based on the previous report dated September 20, 1997.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

- 1 The channel bottom consisted of soft silty sand with up to 8 inches of probe rod penetration.
- 2 Minor areas of poor consolidation were observed in the concrete of Pier 1 at the upstream end.
- 3 A scour depression, 2 feet in radius and 1.5 feet deep, was observed at the upstream nose of Pier 1.
- 4 A scour depression, 2.5 feet in radius and 1 foot deep, was observed at the upstream nose of Pier 2.
- 5 A light to moderate accumulation of timber debris, up to 1 foot in diameter, was observed at the upstream nose and along the west face of Pier 1.
- 6 A light to moderate accumulation of timber debris, up to 6 inches in diameter, was observed at the upstream nose of Pier 2 and extended to the east embankment.
- 7 A 1/16-inch-wide vertical crack was observed on the upstream nose of Pier 1 and extended from the waterline to 3 feet above the waterline.
- 8 Minor vertical bank erosion was observed at the east embankment and upstream and downstream of the structure along both shorelines.

Legend

- 2.0 Sounding Depth from Waterline (11/02/02)
- 5.2 Sounding Depth from Waterline (9/20/97)
- Timber Debris
- Scour Depression

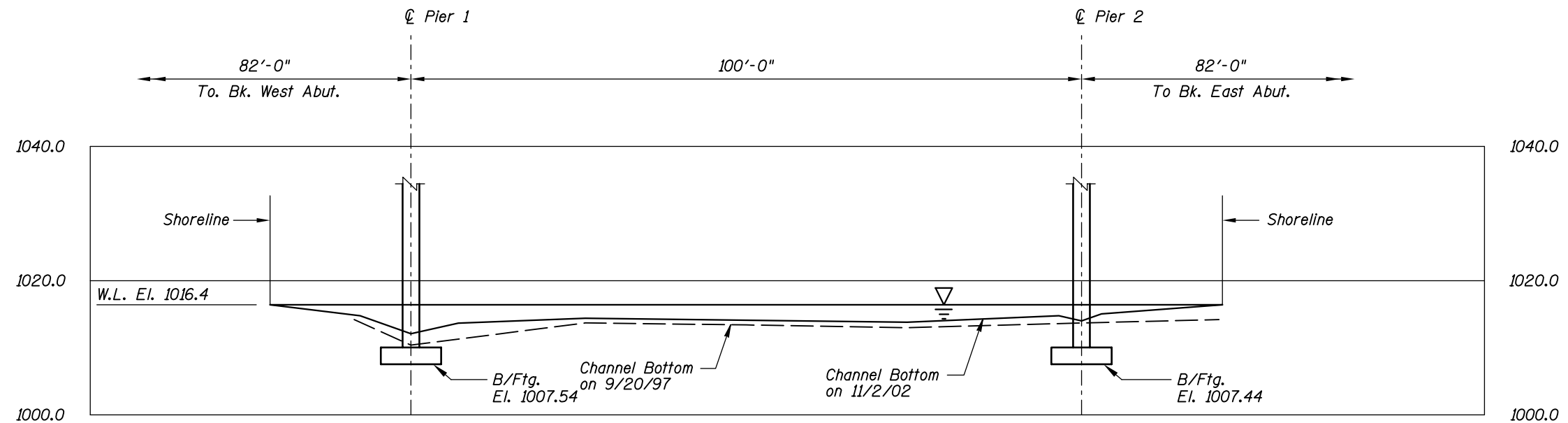
**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

STRUCTURE NO. 07514
OVER THE BLUE EARTH RIVER
DISTRICT 7, BLUE EARTH COUNTY

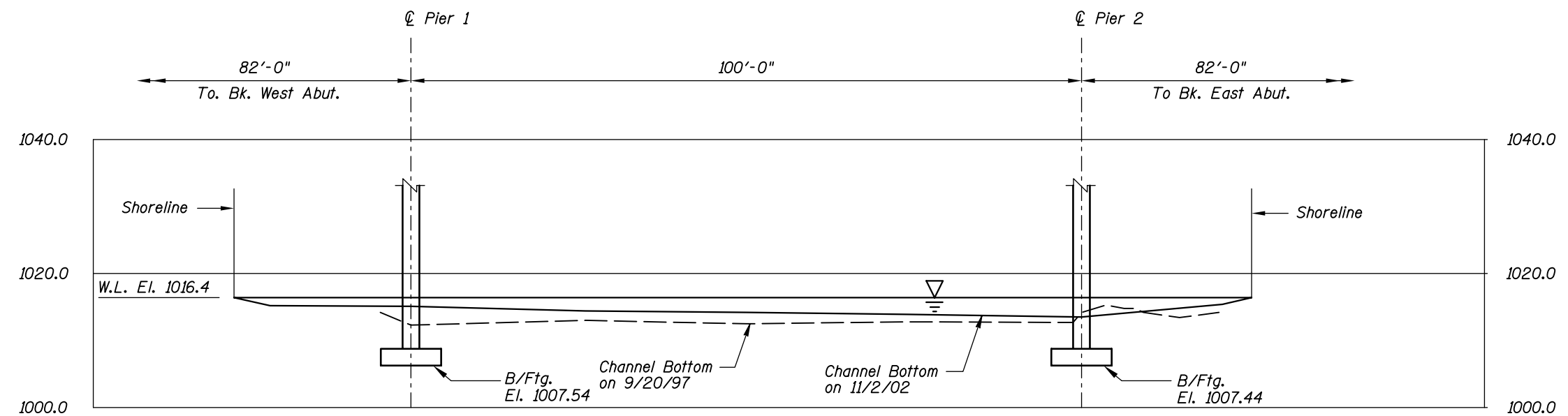
INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: NOV. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35120136		Figure No.: 1

TYPICAL END VIEW OF PIERS



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

STRUCTURE NO. 07514
OVER THE BLUE EARTH RIVER
DISTRICT 7, BLUE EARTH COUNTY
**UPSTREAM AND DOWNSTREAM
FASCIA PROFILES**

Drawn By: PRH
Checked By: MDK
Code: 35120136

COLLINS ENGINEERS, INC.
300 W. WASHINGTON, STE. 600
CHICAGO, ILLINOIS 60606
(312) 704-9300

Date: NOV. 2002
Scale: 1"=20'
Figure No.: 2



Photograph 1. Overall View of Bridge, Looking South.



Photograph 2. View of Pier 1, Looking Northeast.



Photograph 3. View of Pier 2, Looking West.



Photograph 4. View of East Embankment, Looking Southeast.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: September 20, 1997

ON-SITE TEAM LEADER: Shirley M. Walker, P.E.

BRIDGE NO: 07514

WEATHER: Sunny, " 35EF

WATERWAY CROSSED: The Blue Earth River

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER

PERSONNEL: Michelle D. Koerbel, Clayton G. Brookins

EQUIPMENT: Scuba, U/W Light, Probe Rod, Lead Line, Sounding Pole, Scraper, Camera

TIME IN WATER: 11:10 a.m.

TIME OUT OF WATER: 11:30 a.m.

WATERWAY DATA: VELOCITY " 1 f.p.s.

VISIBILITY " 3 foot

DEPTH 4.3 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the concrete piers were in good condition with no structurally significant defects observed. Scour depressions, 2 feet in radius and 1.5 feet deep (Pier 1) and 2.5 feet in radius and 1 foot deep (Pier 2), were observed at the upstream ends of both piers. Minor accumulations of timber debris, with pieces up to 1 foot in diameter, were also observed at both piers. The west embankment was armored with riprap up to 2 feet in diameter, however the east embankment and the banks upstream and downstream of the structure exhibited minor vertical erosion.

FURTHER ACTION NEEDED: _____ YES _____X_____ NO

Monitor the timber debris and if found to be increasing in the future, removal operations may become warranted.

Reinspect the submerged substructure units at the normal maximum recommended interval (NBIS) of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 07514
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Blue Earth River

INSPECTION DATE November 2, 2002

NOTE: USE ALL APPLICABLE CONDITION
DEFINITIONS AS DEFINED IN THE MINNESOTA
RECORDING AND CODING GUIDE INCLUDING
GENERAL, SUBSTRUCTURE, CHANNEL AND
PROTECTION, AND CULVERTS AND WALL
DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE						CHANNEL					GENERAL					
			PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	3.0'	N	7	N	9	N	7	7	7	8	7	6	7	N	N	N	N	N
	Pier 2	4.3'	N	8	N	9	N	8	7	6	6	7	6	8	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete piers were in good condition with no structurally significant defects observed. Scour depressions, 2 feet in radius and 1.5 feet deep (Pier 1) and 2.5 feet in radius and 1 foot deep (Pier 2), were observed at the upstream ends of both piers. Minor accumulations of timber debris, with pieces up to 1 foot in diameter, were also observed at both piers. The west embankment was armored with riprap up to 2 feet in diameter, however the east embankment and the banks upstream and downstream of the structure exhibited minor vertical erosion.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.